New Jersey Department of Environmental Protection

Division of Fish and Wildlife

Martin McHugh, Director

Lawrence J. Niles, Ph.D., Chief
Endangered and Nongame Species Program

New Jersey Bald Eagle Management Project

2004

Prepared by: Larissa Smith, Kathleen E. Clark, Lawrence J. Niles

December, 2004

NEW JERSEY DIVISION OF
Fish and Wildlife

Conserve Wildlife

CONTENTS

Cover photo taken by Principal Biologist, M.Valent at the Delaware Water Gap nest.

New Jersey Bald Eagle Management Project, 2004

Prepared by: Larissa Smith, Kathleen Clark, and Lawrence Niles

Project personnel: Lawrence Niles, Kathleen Clark, Michael Valent, Kris Schantz, Melissa Craddock and Larissa Smith

Abstract:

The Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP) biologists and volunteer observers located and monitored bald eagle nests and territories. A new record high of 48 eagle pairs was monitored during the nesting season; 44 of those were active (with eggs) and four more were territorial (in a nest area). Southern New Jersey continues to support the most nests (77%), while the central area grew to eight, and three were in northern NJ. Thirty-two nests were successful in producing 54 young, for a productivity rate of 1.23 young per active nest. ENSP staff banded and took blood samples from 30 eaglets at fifteen nests. Ten nests failed to produce viable hatchlings, mainly due to contaminants and human disturbance. ENSP staff, regional coordinators, and volunteers reported a total of 177 bald eagles counted in the January 2004 annual Midwinter Bald Eagle Survey. Fifty-two eagles were recorded in north NJ and 125 in the south. The state's eagle population would not be thriving without the efforts of the dedicated eagle volunteers who observe nests, report sightings, and help protect critical habitat.

Introduction

Historically New Jersey hosted more than 20 pairs of nesting bald eagles, mostly in the Delaware Bay region of the state. As a result of the use of the pesticide dichlorodiphenyltrichloroethane, commonly known as DDT, the number of nesting pairs of bald eagles in the state declined to only one by 1970 and remained at one into the early 1980's. Use of DDT was banned in the United States in 1972. That ban, combined with restoration efforts by biologists within the Division of Fish and Wildlife's Endangered and Nongame Species Program (ENSP), resulted in a population increase to 23 active pairs by 2000. ENSP recovery efforts – implemented since the early 1980's – have resulted in an exceptional recovery as New Jersey's eagle population has rebounded from the edge of extirpation.

In 1982, after the Bear Swamp nest – New Jersey's only active bald eagle nest since 1970 – had failed at least six consecutive years, ENSP biologists removed the egg for artificial incubation, and fostered the young nestling back to the nest. As a result of residual DDT contamination, the Bear Swamp eggs were too thin to withstand normal incubation. Artificial incubation and fostering chicks continued successfully until 1989, when the female of the pair was replaced and the pair was able to hatch their own eggs.

Increasing the production from a single nest, however, was not enough to boost the state's population in a reasonable amount of time. Mortality rates are high in young eagles (as high as 80%), and they do not reproduce until about five years of age. ENSP instituted a hacking project

in 1983 that resulted in the release of 60 young eagles in NJ over an eight-year period (Niles et al. 1991). These eagles contributed to the increase in nesting pairs since 1990.

Bald eagles nesting in NJ face many threats. Disturbance is the greatest of these, as people are naturally attracted to the sight of them (Niles et al. 1991). Habitat destruction is also a common problem. Further, in the long term, there is evidence that accumulation of contaminants may threaten the eagle population in NJ, especially in the Delaware Bay region.

ENSP biologists continually work to manage and reduce disturbance in eagle habitats, especially around nest sites. A corps of experienced volunteers, as well as public education and established viewing areas, are crucial to this effort. Biologists also work to protect habitat in a variety of ways, including working with landowners, land acquisition and management, and applying the state's land use regulations. ENSP is also continuing to investigate the impacts of organochlorines and heavy metals in eagles and other raptors nesting in the Delaware Bay region. Bald eagles, ospreys, and peregrine falcons nesting in the region exhibit some reproductive impairment relative to other areas (Steidl et al. 1991, Clark et al. 1998, 2001). ENSP monitors these species during the nesting season to evaluate nest success and assess any problems that occur.

The ENSP, with the Division's Bureau of Law Enforcement and volunteer assistance, works intensively to protect bald eagle nest sites. However, with increasing competition for space in the most densely populated state in the nation, it is becoming clear that critical habitat needs to be identified and, where possible, protected. Critical habitat for eagles includes areas used for foraging, roosting and nesting.

The population of wintering bald eagles has grown along with the nesting population, especially in the last ten years. This growth reflects increasing nesting populations in NJ and the northeast, as each state's recovery effort pays off. In recognition of this success, the federal government upgraded the status of the bald eagle from endangered to threatened in July of 1995, and in 2000 proposed federal de-listing of the species. The federal status remains threatened; however, the eagle remains endangered in New Jersey, and regulatory protection remains the same.

Methods

Nest Survey

All known nest sites are monitored from January through July. Volunteer observers watch nests from a minimum distance of 400 m. using binoculars and spotting scopes, for periods of two or more hours each week. They record all data including number of birds observed, courtship or nesting behaviors, incubation and exchanges, feeding, and other parental care behaviors that provide valuable information on the nesting status. ENSP staff contact volunteers weekly to discuss their observations. Dates are recorded for incubation, hatching, banding, fledging, and, if applicable, nest failure. Hatching dates are used to schedule eaglet banding, and observers' notes determine if closer nest investigation by ENSP biologists is warranted.

Observer's statewide report bald eagle observations to ENSP biologists, who analyze the information for potential nest locations. ENSP staff and volunteers investigate territorial bald eagles for possible nest sites through field observations. When enough evidence has been collected to suggest a probable location, ENSP biologists often conduct aerial surveys of the region to locate a nest.

All nests are secured from disturbance with barriers and/or posted signs. ENSP staff works in partnership with landowners and land managers to cooperatively protect each nest. Volunteers notify ENSP staff immediately if any unusual or threatening activities are seen around the nest site. The Division's Bureau of Law Enforcement acts to enforce protection measures as needed.

When nestlings are between five and eight weeks old, biologists enter the nest site to band the young. A biologist climbs the tree and places nestlings into a large duffel bag and lowers them, one at a time, to the ground. A team records measurements (bill depth and length, eighth primary length, tarsal width, and weight) and bands each eaglet with a federal band and a green state color band. A veterinarian examines each bird and takes a blood sample for contaminant analysis. Blood is collected and stored following techniques in Bowerman et al. (1994). Samples are stored frozen pending analysis by a technical lab. Nest trees are generally not climbed the first season to avoid associating disturbance with the new site.

Wintering Eagle Survey

The nationwide Midwinter Bald Eagle Survey is conducted every January to monitor population levels. The ENSP contracted New Jersey Audubon Society's Cape May Bird Observatory and Allan Ambler of the Delaware Water Gap National Recreation Area to coordinate the survey in southern and northern NJ respectively. These researchers organized volunteers to cover all suitable and known wintering habitat, then tracked the number of individual eagles observed on both days of the survey using plumage characteristics and time observed. Their results, as well as those from ENSP volunteers at northern reservoirs, were compiled by ENSP biologists to determine statewide totals. Final results were tabulated by ENSP staff according to standardized survey routes, and provided to the Raptor Research and Technical Assistance Center in the federal Bureau of Land Management. For the third year volunteers also mapped eagle activity during the two-day survey; these data delineating critical eagle wintering habitat will be incorporated into the NJ Landscape Project.

Results

Nest Survey

The statewide population increased to 48 pairs in 2004, up from 40 in 2003. Forty-four pairs were active (meaning they laid eggs). Thirty-two nests were successful in producing 54 young, for a productivity rate of 1.23 young per active nest, somewhat greater than that required for population maintenance (0.9-1.1 young/active nest) (Figure 2). Most nests were located in the southern part of the state, particularly within 20 km of Delaware River and Bay (Map 1). All nests and potential sites are described individually below and in Table 1.

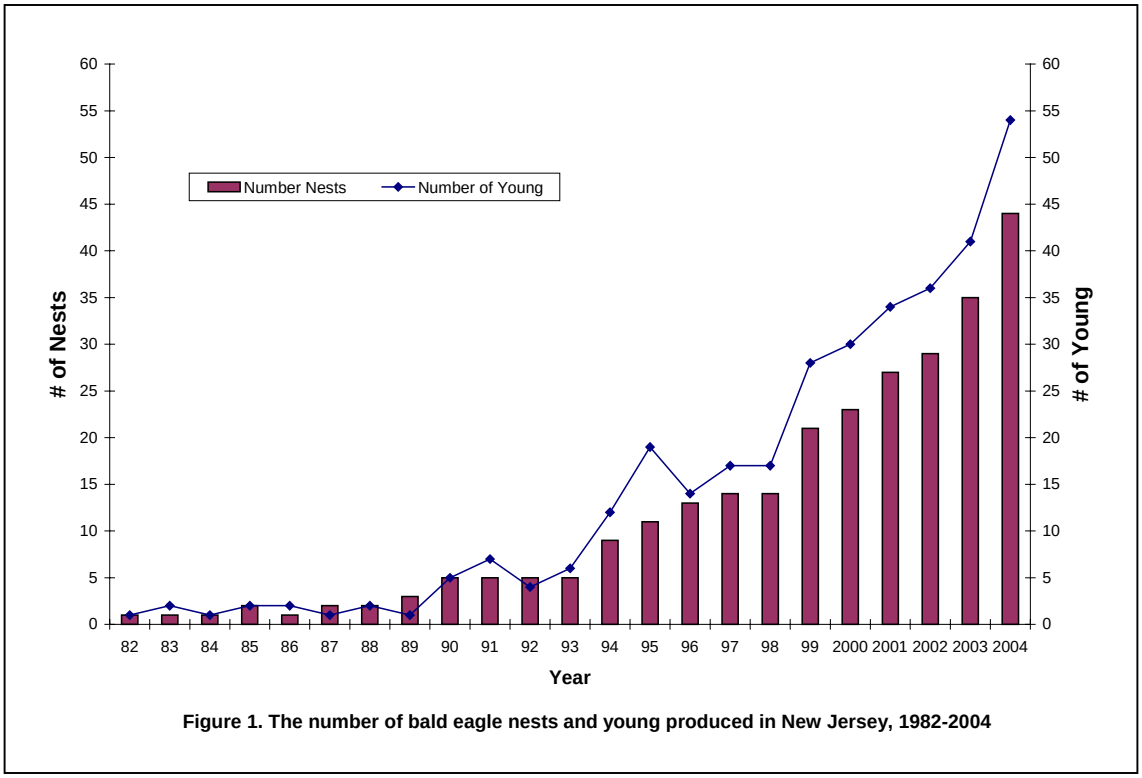


Figure 1. The number of bald eagle nests and young produced in New Jersey, 1982-2004

Most nests, 34 (71%), were located on private land, as opposed to 14 (29%) nests on public and conservation lands. Disturbance was a management issue at many nests, and posting and regular surveillance by staff and nest observers was essential to protecting nests and assuring success.

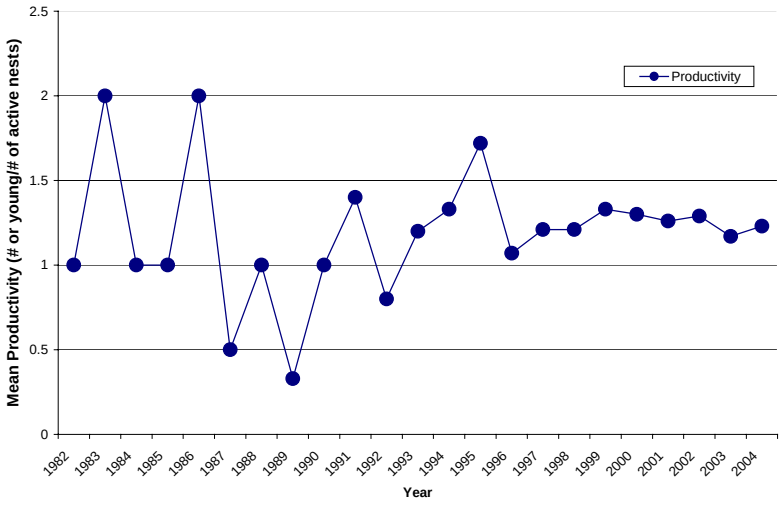
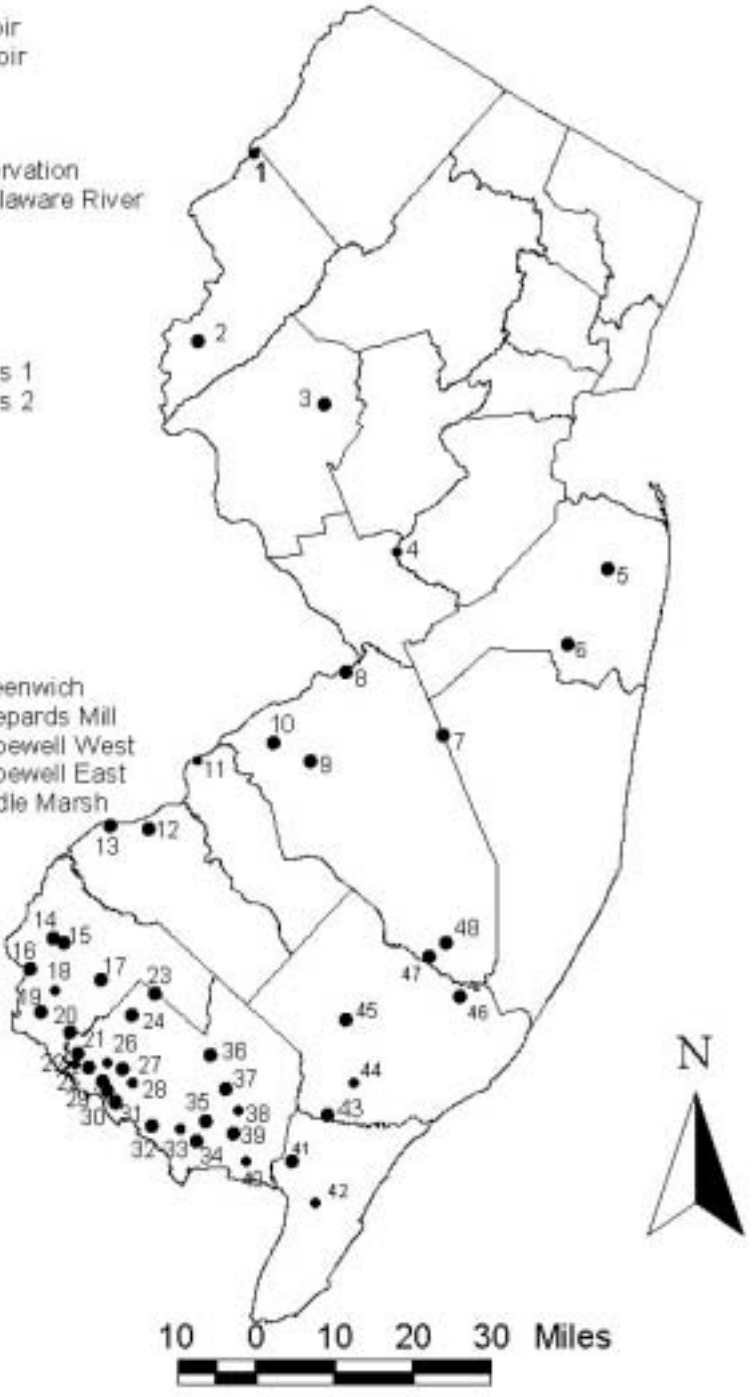


Figure 2. Productivity Of Eagle Nests in New Jersey, 1982-2004

Map 1. Bald Eagle Nest Sites, 2004

1 Delaware Water Gap
2 Merrill Creek Reservoir
3 Round Valley Reservoir
4 Princeton
5 Navesink River
6 Manasquan River
7 Fort Dix Military Reservation
8 Burlington County/Delaware River
9 Rancocas Creek 2
10 Rancocas Creek 1
11 Camden County
12 Mantua Creek
13 Raccoon Creek
14 Mannington Meadows 1
15 Mannington Meadows 2
16 Supawna
17 Alloways Creek 2
18 Alloways Creek 3
19 Alloways Creek 1
20 Stow Creek 1
21 Stow Creek 2
22 Wheaton Island
23 Elmer
24 Seeley Lake
25 Cohansey River- Greenwich
26 Cohansey River- Shepards Mill
27 Cohansey River- Hopewell West
28 Cohansey River- Hopewell East
29 Cohansey River-Middle Marsh
30 Cohansey River-Dix
31 Seabreeze
32 Nantuxent Creek
33 Turkey Point
34 Dividing Creek
35 Bear Swamp
36 Union Lake
37 Maurice River 3
38 Maurice River 2
39 Maurice River 1
40 Heislerville
41 Belleplain
42 South Dennis
43 Tuckahoe
44 Egg Harbor
45 Lake Lenape
46 Galloway
47 Mullica River
48 Wading River



Conserve Wildlife

NEW JERSEY DIVISION OF Fish and Wildlife

Alloways Creek 1 (Hancocks Bridge)
This is the eighth season that this pair nested in a willow oak (*Quercus phellos*) adjacent to an active farm field. The pair rebuilt their nest higher in the same tree after the nest fell during the 2003 season. Incubation began on March 12 and eggs hatched on April 17. Two chicks were seen in the nest and feeding was observed, but on June 8 no chicks could be seen. The area around the nest was searched but nothing was found. The chicks would have been at least six weeks old when they disappeared, and it is unknown what happened to cause this loss.

Alloways Creek 2 (Alloway)
The Alloways Creek 2 pair built a new nest this season in fairly close proximity to the old nest, along the upper Alloways Creek drainage in a large contiguous forest on state land. The pair began incubating around March 14 and hatched around April 19. The nest was very difficult to observe once the leaves were out. One fledgling was seen in early August.

Alloways Creek 3 (Quinton)
This pair rebuilt their nest in the same nest tree as last season, along the edge of a farm field near Alloways Creek. The pair began incubation on February 26 and hatching occurred on April 3. The pair fledged one chick on June 23.

Bear Swamp
At the state's oldest nest site, the pair used a partially dead tulip poplar (*Liriodendron tulipifera*) in which they nested last year. The pair began incubation around February 20 and hatching occurred around March 29. The nest observer reported fledging of two chicks on June 21.

Belleplain (East Creek Pond)
The Belleplain State Forest eagles for the sixth year nested in a pitch pine *(Pinus rigida)* lying in a large contiguous forest. This nest is not viewable from the ground. On April 30 a biologist flew over the nest and observed two approximately four-week old chicks. The chicks were banded on May 17. At the time of banding the chicks were 43 and 49 days old, putting hatching around March 30. Because of the difficulty in viewing this nest fledging was not confirmed but assumed.

Burlington County/ Delaware River
For the second year the pair nested in a poplar tree in Burlington County near the Delaware River. This was the sixth nesting season for this pair along the river. Incubation began around February 20 and hatching occurred around March 26. Biologists banded two chicks on May 7. Fledging was reported on July 9.

Camden County Nest
For the second year this pair nested on an island in the Delaware River in Camden County. Incubation was reported on March 2 by the nest observer. On April 3 ENSP biologists removed the egg and placed a two-week old foster chick into the nest. The egg was incubated in the lab, and hatched on April 8; the hatchling did not thrive and died two weeks later, and was examined by the Division's pathologist. The fostered nestling did well, but apparently fledged prematurely and was found injured on the ground near the nest; it died enroute to an avian treatment center.

Cohansey River (Fairfield)
This pair was seen at last season's nest and in the area of the nest, but did not incubate. An ENSP biologist flew over the vicinity of past nests looking for a new nest but did not find anything. It is believed the pair is nesting in the area. Biologists and observers will closely monitor this pair next nesting season.

Cohansey River (Greenwich)
For the fifth season the Greenwich pair occupied their nest in a tulip poplar. The pair began incubation on February 5, and hatching occurred on March 10. Biologists banded two eaglets on April 18 and the birds fledged June 4.

Cohansey River (Shepards Mill)
For the second year this pair occupied a nest along the Cohansey River adjacent to farm fields. The birds began incubating February 10 and hatching occurred on March 18. One bird fledged from this nest on June 3.

Cohansey River (Hopewell West)
During September 2003 the tree in which this pair had nested for five seasons was destroyed during Hurricane Isabel. In early 2004 the pair built a nest in a new tree located within a half mile of the old nest. The pair was incubating as of February 21 and hatching occurred around March 29. Biologists banded three eaglets on May 10 and the birds fledged June 24.

Cohansey River (Hopewell East)
The Hopewell East pair did not return to the nest they used for the past two years; the nest was occupied by great horned owls. A new nest was found across the river in a patch of woods next to a field and house, and we believe this was the Hopewell East pair. Incubation began on February 18 and hatching was reported on March 11. One chick fledged from this nest on June 11.

Cohansey River (Dix)
For the second year this pair nested in a Wildlife Management Area. This nest is difficult to observe without disturbing the birds and must be viewed from a long distance. Exact dates of hatching and incubation were unknown. In early July one fledge was observed at the nest tree.

Delaware Water Gap (Walpack)
This is the second year that this pair nested on the New Jersey's upper Delaware River in a white pine (*Pinus strobus*). The pair was found incubating in mid-February and hatching was reported around April 23. Biologists banded two chicks on June 3 and fledging was reported on July 15.

Dividing Creek
For the third year this pair nested in a pine tree located in the tidal marsh along Delaware Bay. Incubation was reported on February 8 and hatching occurred around March 14. Biologists banded the two birds on April 27 and fledging occurred around June 11.

Egg Harbor River
During the Mid-winter Eagle Survey a new nest was found along the Egg Harbor River. The birds were reported incubating on February 27. The outcome of this nest was unknown, as the nest cannot be seen after leaf-out. ENSP biologists and volunteers will monitor this nest closely next season to find a spot to observe as well as flights over the nest to determine outcome.

Elmer
This new nest is located along an old irrigation ditch in Cumberland County. The pair began incubating around February 10 and hatching of one young was reported on April 12.

Fort Dix
For the fifth year eagles nested in a pitch pine in a large contiguous forest on the Fort Dix Military Reservation. Incubation was reported on February 17. Nest failure was reported on March 25. The reason for failure is unknown. This is the second consecutive year that this nest has failed. Observers will continue to monitor this pair closely next season.

Galloway Township
For the sixth year the Galloway pair nested atop a pitch pine on a tidal creek tree island. The eagles began incubating around February 26 and hatching was reported in early April. Biologists banded the two eaglets on May 14 and fledging was observed June 26.

Heislerville
This new pair was first observed during the Mid-winter Eagle Survey. The nest is located along the edge of a tidal marsh. Incubation began on February 21 and hatching occurred on March 27. Two chicks fledged around June 5.

Lake Lenape
After nesting for five years in an ENSP-built nest, this pair returned to their 1998 nest located on a nearby island. This nest was posted by Lake Lenape employees and ENSP biologists to discourage disturbance. The birds were found incubating on February 26 and hatching was reported on March 30. Biologists banded three eaglets on May 14; there was an unusually large size difference between the youngest and oldest chick. In early June the nest observer reported that the youngest chick was no longer in the nest. Two chicks were reported fledged on June 29.

Manasquan Reservoir
For the third year this pair nested successfully at a reservoir managed by Monmouth County Park Commission. This season the pair moved to a new nest tree across the reservoir from their previous nest. This new nest location proved to be in a better location since it did not receive as much disturbance. The area around the nest and the reservoir near the nest were posted to prevent undue disturbance during nesting. The pair began incubating on February 27 and hatching occurred on April 4. Three chicks fledged from the nest on June 25.

Mannington Meadows (Horne Run)
For the sixth year this pair nested atop a large black oak (*Quercus velutina*) lying between a farm field and tidal water spit. Incubation was reported on February 9 and hatching occurred on

March 15. Biologists banded two chicks on May 17. After failing for the past two seasons the pair fledged two birds on June 14.

Mannington Meadows 2 (Halls Run)
This pair moved to a new nest tree not far from their previous nest of two years. The new nest is located along the edge of an active agricultural field. The pair was incubating by March 11 and hatching was reported on April 18. Biologists banded two birds on June 2 and fledging was first observed on July 25.

Mantua Creek
The Mantua Creek pair relocated to a tree closer to the Delaware River after the 2003 nest tree fell during the winter. The pair began incubation on March 10 and hatching occurred on April 15. Biologists banded two six-week old birds on May 27. The exact date of fledging is unknown due to the difficulty in observing the nest.

Maurice River South (Commercial)
For the sixth year the eagle pair nested atop a partially dead (and unclimable) red maple (*Acer rubrum*). The tree lies on a forested peninsula jutting out into the rich Maurice River estuary, and the nest is quite difficult to observe. Incubation was underway on or before February 23 and hatching occurred in mid-April. One bird fledged as of July 17.

Maurice River North
For the fourth year this pair nested in a pitch pine along the edge of the Maurice River. Incubation was reported in the beginning of February and hatching occurred around March 17. On April 2 biologists removed a two-week old eagle, one of two, from the nest. One was then fostered into the Camden County nest. The remaining chick was reported fledged.

Maurcie River (Millville)
This new pair was found incubating on March 28 along the Maurice River on Nature Conservancy property. The nest is very difficult to observe once it becomes obscured by the foliage, so the hatching date was unknown. Two fledges were observed perching on a nearby tree.

Merrill Creek Reservoir
This was the fifth year of nesting and the third year the pair used a new nest on the shore of the reservoir. Reservoir personnel worked closely with ENSP staff to protect the nest site. Incubation was reported on February 10, and hatching was reported on March 23. Biologists banded one chick on May 5 and fledging was reported on June 16.

Mullica River
For the fourth year this pair nested in a pitch pine on the Mullica River. Incubation began around February 27 and hatching occurred in early April. Nest failure was reported on April 24. The reason for failure at this nest is unknown.

Nantuxent Creek
For a second season this pair nested in a tree located in the marsh along Nantuxent Creek, making it their third location in ten years in the area. Incubation began on February 8 and hatching was reported on March 9. One bird was reported fledged.

Navesink River
This is the fifth season this pair has nested along the river, and the third season this pair nested in a large white oak. Incubation was reported on March 4 and hatching was reported on April 7. Biologists banded the one eaglet on May 19 and fledging was reported on June 27.

Princeton
A pair of bald eagles was reported in the Princeton area early in the season, biologists and observers soon confirmed a nest. Incubation began on February 28 and hatching was reported on April 9. Two young birds fledged on July 2. Though this pair nested in a more developed area disturbance was limited due to the efforts of property owners near the nest.

Raccoon Creek (Delaware River)
The pair occupied the Delaware River site they have used since 1997. They began incubation March 1. The pair abandoned incubation on April 25, three weeks past the expected hatch date. High levels of contaminants are suspected to be the cause, as this pair has a history of egg failure due to organochlorines.

Rancocas Creek 1
For the third year this pair used a nest in a sweetgum tree located on the edge of an active farm field. Incubation began on February 12. Nest failure was reported on April 1. Reason for failure is suspected to be contaminants.

Rancocas Creek 2 (East)
This pair, first territorial in 2001, was not seen during the nesting season. Nest volunteers and staff will continue to monitor this area during the 2005 nesting season.

Round Valley Reservoir
The eagles again nested at the site occupied since 1995 near Round Valley Reservoir. Incubation was reported on February 26 and hatching occurred on April 3. The nest could not be seen after leaf-out, so its success was unknown. ENSP plans to fly over the nest next year to monitor the nest.

Sea Breeze
In 2003 this pair had built a huge nest along the edge of a marsh but failed to incubate. In December 2003 they began working on the nest and increasing its size. On February 18 the birds began incubating. On March 12 the nest blew out of the tree during a windstorm. The birds began building another nest in nearby tree, but it was too late for another incubation attempt. Observers and volunteers will closely monitor this pair next season.

Seely Lake
This pair, first territorial in 2001, was not seen during the 2004 nesting season. It is believed that the pair may be nesting in a new location nearby. Observers and ENSP staff will watch for this pair during the 2005 nesting season.

South Dennis
The pair built a nest on the edge of a swamp. The water was posted to limit disturbance to the nesting birds. The pair started incubating on March 14 and hatching occurred on April 15. Nest failure was confirmed on April 28. The reason for failure was unknown.

Stow Creek North
The Stow Creek pair returned to the sycamore tree in which they nested two years ago. The pair began incubation on March 1 and hatching occurred on April 6. Three chicks were originally seen by the nest observer. The oldest chick was observed attacking the youngest bird. The youngest bird did not survive and the two oldest birds fledged on July 2. Between 1990 and 2003, the Stow Creek eagle pair successfully raised 30 eaglets, making them the most productive pair in the state.

Stow Creek South
This was the second year that this pair nested in a pine tree in a somewhat residential area. The pair began incubation on February 4 and hatching occurred on March 11. Two eaglets fledged on June 3.

Supawna Meadows
The Supawna eagles for a sixth year occupied a nest built on a PSE&G transmission tower in Supawna Meadows National Wildlife Refuge. The pair began incubating on February 29 and hatching occurred around April 10. Nest failure was reported on May 2, the reason for failure was unknown.

Tuckahoe
For the third year this pair nested along the Tuckahoe River. Incubation began on March 8 and hatching occurred on April 12. Biologists banded two chicks on May 10, and fledging was reported on July 3. Only one fledgling was confirmed.

Turkey Point
This new nest was found in early March with the birds incubating. The exact date of hatching was unknown. One bird was reported fledged on June 11. Biologists and observers will closely monitor this nest in the upcoming season.

Union Lake
This was the eleventh season that eagles occupied the nest atop a pitch pine on Union Lake Wildlife Management Area. Incubation began approximately around February 10 and hatching occurred March 16. Biologists banded the two eaglets on April 27 and fledging was first reported on June 16. ENSP staff continued to mark a small lake cove near the nest as a “Restricted Area” to minimize disturbance to the pair.

Wading River
The Wading River pair was sighted on several occasions this season. It is unknown where the birds nested, as they did not return to their 2002 nest. Volunteers and staff will continue to monitor this area next season.

Wheaton Island
This is a new pair that began incubating on February 10 in Cumberland County. Nest failure was reported on March 18. Reason for failure was unknown, though it is not uncommon for a pair's first nesting attempt to fail.

Potential Nest Sites
ENSP biologists and observers actively searched for possible nesting bald eagles in several different locations. The searches were in response to the many reports of eagles engaging in breeding behaviors. Areas that remain promising are Big Timber Creek, Batsto Lake, Oswego Lake and the Williamstown area which all have year-round eagle activity. In addition, several inland reservoirs in the north, including Wanaque, hold promise of eventual eagle nesting.

Table 1. Production and Significant Dates of Bald Eagles Nesting in NJ, 2004

Nest Site	Incubation	Hatching	Banding	Fledging	No. Fledged	Notes
Alloways Creek 1	3/12/04	4/17/04	N/A	N/A	0	2 nestlings; 6/8 nestlings reported missing; reason unknown
Alloways Creek 2	3/14/04	4/19/04	N/A	Unknown	1	
Alloways Creek 3	2/26/04	4/3/04	N/A	6/23/04	1	
Bear Swamp	2/20/04	3/29/04	N/A	6/21/04	2	
Belleplain	*3/1/04	*4/5/04	5/17/04	Unknown	2	Determined by fly-over
Burlington Co./Del. R.	*2/20/04	3/26/04	5/7/04	7/9/04	2	
Camden County	3/2/04	N/A	N/A	N/A	0	Egg removed from nest and incubated, hatchling died. Chick fostered into nest, died at fledging
Cohansey (Fairfield)	N/A	N/A	N/A	N/A		Pair in area; nest not found
Cohansey (Greenwich)	2/5/04	3/10/04	4/18/04	6/4/04	2	
Cohansey (Shepards Mill)	2/10/04	3/18/04	N/A	6/3/04	1	
Cohansey (Hopewell West)	2/21/04	3/29/04	5/10/04	6/24/04	3	New nest location
Cohansey (Hopewell East)	2/18/04	3/11/04	N/A	6/11/04	1	New nest location
Cohansey (Dix)	<3/23/04	<4/29/04	N/A	7/9/04	1	
Delaware Water Gap	*3/3/04	*4/15/04	6/3/04	7/15/04	2	
Dividing Creek	2/8/04	3/14/04	4/27/04	6/11/04	2	
Egg Harbor River	<2/27/04	Unknown	N/A	Unknown	Unknown	New nest
Elmer	2/10/04	4/12/04	N/A	Unknown	1	New nest
Fort Dix	2/17/04	N/A	N/A	N/A	0	Failed 3/25
Galloway	2/26/04	4/5/04	5/14/04	6/26/04	2	
Heislerville	2/21/04	3/27/04	N/A	6/5/04	2	New nest
Lake Lenape	2/26/04	3/30/04	5/14/04	6/29/04	2	3 chicks banded; third did not survive
Manasquan Reservoir	2/27/04	4/4/04	N/A	6/25/04	3	
Mannington Meadows 1	2/9/04	3/15/04	5/17/04	6/14/04	2	

Table 1. Continued

Mannington Meadows 2	3/11/04	4/18/04	6/2/04	7/25/04	2	
Mantua Creek	3/10/04	4/15/04	5/27/04	unknown	2	
Maurice River South	2/23/04	<4/17/04	N/A	7/17/04	1	
Maurice River North	2/8/04	3/17/04	N/A	Unknown	1	2 chicks; 1 fostered into Camden nest 4/3
Maurice River (Millville)	3/28/04	Unknown	N/A	Unknown	2	New nest; found incubating
Merrill Creek	2/10/04	3/23/04	5/5/04	6/16/04	1	
Mullica River	2/27/04	4/8/04	N/A	N/A	0	Failed 4/24
Nantuxent Creek	2/8/04	3/9/04	N/A	unknown	1	
Navesink River	3/4/04	4/7/04	5/19/04	6/27/04	1	
Princeton	2/28/04	4/9/04	N/A	7/2/04	2	New nest
Raccoon Creek	3/1/04	N/A	N/A	N/A	0	Failed; 4/15 abandoned nest
Rancocas Creek 1	2/12/04	N/A	N/A	N/A	0	Nest failed 4/1
Rancocas Creek 2	N/A	N/A	N/A	N/A	N/A	Unknown where pair is nesting
Round Valley	2/26/04	4/3/04	N/A	Unknown	Unknown	
Seabreeze	2/18/04	N/A	N/A	N/A	0	Nest blew out of tree 3/12
Seely Lake	N/A	N/A	N/A	N/A	N/A	Nesting location unknown
South Dennis	3/14/04	4/15/04	N/A	N/A	0	Failed 4/28
Stow Creek North	3/1/04	4/6/04	N/A	7/2/04	2	Originally 3 chicks observed; Two fledged
Stow Creek South	2/4/04	3/11/04	N/A	6/3/04	2	
Supawna Meadows	2/29/04	~4/10//04	N/A	N/A	0	Failed 5/2
Tuckahoe	3/8/04	4/12/04	5/10/04	7/3/04	2	One fledgling confirmed
Turkey Point	<3/14/04	Unknown	N/A	6/11/04	1	New nest
Union Lake	2/10/04	3/16/04	4/27/04	6/16/04	2	
Wading River	N/A	N/A	N/A	N/A	0	Nest has not been located
Wheaton Island	2/10/04	N/A	N/A	N/A	0	New nest; failed 3/18
TOTAL	48 pairs				54 young	

* These dates are estimates.

Wintering Eagle Survey

A total of 177 bald eagles were observed during the Midwinter Survey on January 10-11, 2004 (Table 2). This was the highest count ever, with one more bird than 1997's record of 176 (Figure 3). Southern New Jersey continued to host the majority of the state's wintering birds.

One hundred twenty-five bald eagles were counted in southern New Jersey, of which 89 were adults (Table 2; Elia 2004). Most southern eagles were observed in the Delaware Bay region (45%), followed by Atlantic Coast watersheds (29%) and the lower Delaware River (26%). The transects with the highest counts were the Maurice River with 25 eagles, the Cohansey River with 20, and Salem County with 21.

The many tributaries of southern New Jersey hold some of the best habitat, and therefore more birds. In northern New Jersey, the best habitats are along the Delaware, in the Delaware Water Gap National Recreation Area, and the inland reservoirs. The Water Gap hosted 20 bald eagles (Ambler 2004), while the inland reservoirs and lakes had 25. Seven eagles were counted in northeastern New Jersey along the Palisades on the Hudson River.

Most winter survey volunteers recorded details on individual eagles sighted, as well as point locations on maps. These point locations were digitized and will be used to design critical wintering habitat areas.

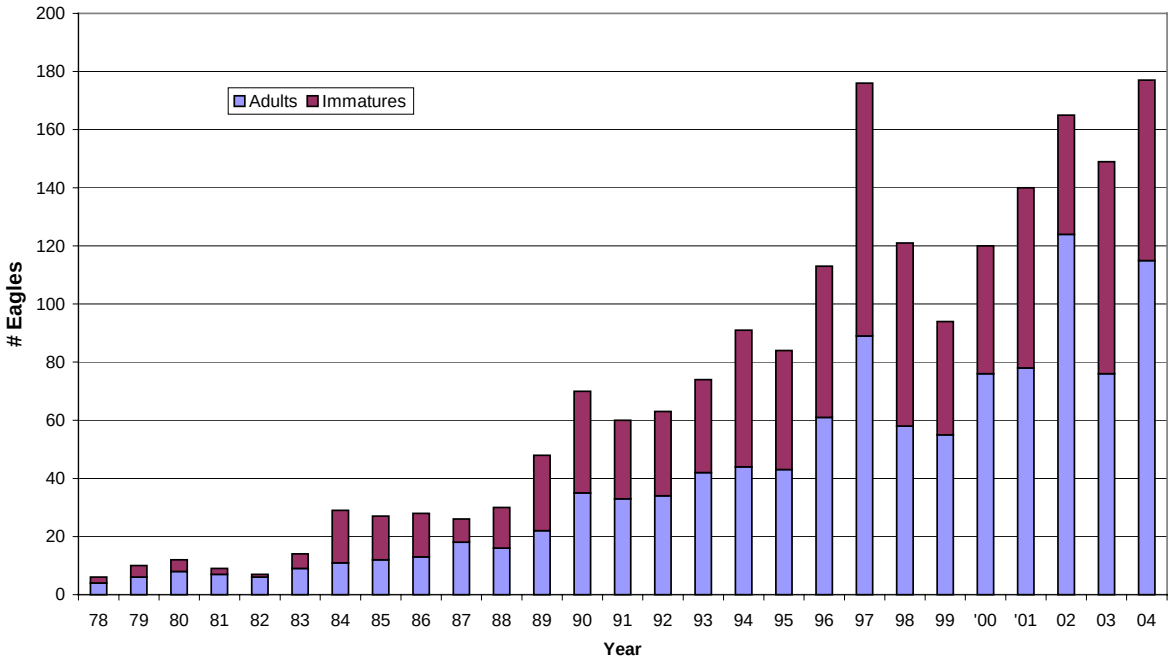


Figure 3. Midwinter Bald Eagle Counts 1978 - 2004

Table 2. Bald Eagles counted in the NJ Midwinter Bald Eagle Survey, January 10-11, 2004

Region	Survey Transect	Subregion	BE Total	Adult	Immature	Unkn. BE	Golden
South	Brigantine NWR	AC	2	2	0	0	0
	Cohansey River	DB	20	14	6	0	0
	Delaware River - Riverton to Trenton	SD	6	3	3	0	0
	Fortescue to Stow Creek	DB	0	0	0	0	0
	Fort Dix	AC	0	0	0	0	0
	Great Egg Harbor & Tuckahoe Rivers	AC	6	4	2	0	0
	Manahawkin to Lower Bass River	AC	1	1	0	0	0
	Manasquan Reservoir	AC	2	2	0	0	0
	Maurice River, Turkey Point, Bear Swamp	DB	25	15	10	0	1
	Mullica & Wading Rivers	AC	18	12	6	0	5
	Oldman's Creek	SD	0	0	0	0	0
	Raccoon Creek	SD	4	4	0	0	0
	Rancocas Creek	SD	2	2	0	0	0
	Salem County	SD	21	15	6	0	0
	Stow Creek	DB	5	4	1	0	0
	Swimming River Reservoir	AC	3	2	1	0	0
	Thompson's to Reeds Beach	DB	6	6	0	0	0
	Whitesbog	AC	4	3	1	0	0
South	**Subtotal**		**125**	**89**	**36**	**0**	**6**
North	Delaware River - Columbia to Trenton	ND	0	0	0	0	0
	Delaware Water Gap	DWG	20	11	9	0	2
	Hudson River - Palisades	P	7	2	5	0	0
	Jersey City Reservoirs (Boonton & Split Rock)	IR	8	4	4	0	0
	Merrill Creek Reservoir	IR	3	2	1	0	0
	Newark Watershed (Clinton & Charlottesburg)	IR	0	0	0	0	0
	Oradell Reservoir	IR	4	1	3	0	0
	Round Valley Reservoir	IR	2	2	0	0	0
	Wanaque & Monksville Reservoir	IR	8	4	4	0	0
North	**Subtotal**		**52**	**26**	**26**	**0**	**2**
State	**Total**		**177**	**115**	**62**	**0**	**8**

Subregion:AC=Atlantic Coast, DB=Delaware Bay, DWG=Delaware Water Gap, IR=Inland Reservoirs, ND=Northern Delaware River, P=Palisades-Hudson River, SD=Southern Delaware River

Contaminants Research

Environmental contaminants seem to affect the success of at least five nests, primarily in the lower Delaware River region. As part of our monitoring program, blood samples were collected from 27 nestling eagles at 14 nest sites at the time of banding. These samples were frozen for future analysis. One egg was collected from a nest in Camden County and incubated in the lab, based on previous failures to produce. The egg hatched under the artificial incubation conditions, but the hatchling failed to thrive, had difficulty eating and raising its head, and seemed to show an impaired tarsal joint in the right leg. The nestling died at the age of two weeks, weighing just 234 g, a fraction of the weight of a normal nestling of that age. Tissues were saved for future analysis by NJDFW and the U.S. Fish and Wildlife Service.

Recoveries

On March 17, 2004 a juvenile bald eagle was hit and killed by a car on the southbound side of Route 55 in Cumberland County. The bird was not banded.

A bald eagle fledgling was recovered injured in Camden County near its nest, and died before it reached treatment. An investigation surrounding possible disturbance to the nest area is ongoing by the Division's Bureau of Law Enforcement.

One adult bald eagle was hit by a car on May 29, 2004 in the area of Route 18 in Marlboro, Monmouth County. The bird was treated at the Raptor Trust, its injuries were permanent and it was deemed unreleasable.

On June 12, 2004, a two year-old male eagle was found unable to fly in Liberty Corner, Somerset County. The eagle was taken to the Raptor Trust, and after two months of care was successfully released on July 30 in the Great Swamp National Wildlife Refuge.

On July 13, 2004, an unbanded third year eagle was found dead below a powerline in Fairfield Township, Cumberland County.

The eagle nestling banded at Merrill Creek on May 5, 2004 was found dead at Aberdeen Proving Grounds in Maryland on Oct 14, 2004. The bird apparently flew into wires, but a necropsy will be done by US Fish and Wildlife Service.

On November 11, 2004 an adult bald eagle was found dead near Union Lake Wildlife Management Area in Cumberland County. The cause of death is unknown.

On November 13, 2004 an adult eagle was found dead in Galloway Township, Atlantic County. A necropsy was performed and the cause of death was found to be from an unknown trauma.

On November 13, 2004 a first year bird was found injured near Lebanon, Hunterdon County and was taken to Raptor Trust. The bird was banded in June 2004 in Canada Falls Lake, Maine. Surgery was performed to repair a fracture in the wing, but the bird had to be euthanized due to an infection.

Acknowledgments

The ENSP relies upon a team of dedicated observers and cooperators for the success of the Bald Eagle Project.

We thank the following people for their dedication to this program and for providing invaluable field data and assistance with the general operations of the project: Bunny and Elmer Clegg, Mary Jane and Leroy Horner, Ed Hazard, George Palir, Ed Bruder, Katherine Spence, Carol and Dan LaFon, Mary Lou and Ed Nelson, Elaine Giberson, Linda Merkh, Debbie & Bob Holzinger, David George, Walt Ford, Todd Edwards, Bruce Beans, Bill McDermott, Linn Pierson, Barnie and Carol Monks, Jack Connor, Rusty Asdourian, John Healy, Joe Leoni, Helen & Henry Swanson, Ginny Diehm, Judy Welch, Loretta Dunne, Jonathan Stillwell, Andy Campbell, Daniel Thomas, John Stuebing, Don Garrison, Steve Gates, George and Mary Coulter, Tracy Smith, Jenn Coyne, Victor Ganno, Jack and Patty Wettstein, Donna & Heiki Poolake, Rich Beck, Allan Ambler, Bill Gallagher, Paul & Peg Totten, Jane Burman,Vince Elia, Wendy Rhoads, Dave and Kellie Bodmer, Leslie and Tony Ficcaglia, Jody Carrara, Jane Morton Galetto, Peter Galetto, Brent Burke, Chris Kisiel, Bert Hixon, Chris Kunz, Barb Craig, Dan Palyca, Don Bishop, Ed Manners, Paul and Teresa Jackson, Don Krider, Penny Laning, William McCurdy, John and Carol Knapp, William Brader, Matt Brader, Frank Budney, Teri Loy, Valerie Pullen, Stephanie Belvedere, Robert Johnson, Todd Pover, Jane Burman, Deb Nickols, Doris Mannix, William Stuempfig, John Mikalonis, and Augie Sexauer; Doug Roscoe; Judy Hansen and Lynn Hayward of Cape May County Mosquito Commission; Patty O'Rourke and Ken Thoman of the Monmouth County Park System; James and Carolynn Pauze; Ranger Cynthia Coritz of Round Valley Recreation Area; Tom Keck , Rangers Jennifer Curcio, Walt Pettigrew and Kathleen Myer of Belleplain State Forest; Matt Klewin; Margaret Atack, Clayton Ingersoll and the staff at Atlantic County Parks; Tom Walker, Patrick Didomizio and Linda Ziemba of Supawna Meadows NWR; Roger and Terry Smith at the Fort Dix Military Reservation; Kevin Keane of New Jersey-American Water Co.; Ray Sexton of the Sunrise Rod and Gun Club; Mr. Jack McCrossin at the Citgo Petroleum Corporation; Jane Bullis, Jim Mershon and the staff of the Merrill Creek Reservoir; Moe Pirestani, Staff and Tom Matlock at DuPont; Bill Caldwell and Jim Markel at Unimin.

We are grateful to Dr. Erica Miller of Tri-State Bird Rescue and Research for her veterinary assistance, Don and Karen Bonica of Toms River Avian Care for their indefatigable availability, Stephen Serwatka from New Jersey Nature, Len Soucy and the Raptor Trust and New Jersey State Police for support in conducting aerial surveys. We also thank Pat and Clay Sutton for their intimate knowledge of New Jersey eagles; David Mizrahi, Eric Stiles, Vince Elia, & New Jersey Audubon staff; the New Jersey Forest Fire wardens for their keen eyesight; and John Streep, The Hinchmans, Vincent and Christine Petka, Nanu and Lila Maisuria, Kenny and Harold Truellender, Mr. and Mrs. Sam Owens, Geoffrey Cramer, Anna Marie Sheppard, Raymond Sheppard, Paul Ludwig, Dean and Cindy Kershaw, William and Margaret Donaghy, Doug Vogal, Barbara Sommes, Paul Galleta, and Ranch Hope personnel.

Special thanks to Division Conservation Officers for their help protecting the state's eagles.

Literature Cited

Ambler, A. 2004. Midwinter bald eagle survey, northern NJ. Unpubl. rep. to Endangered and Nongame Species Program, NJ Div. of Fish and Wildlife.

Bowerman, W.,D.A. Best, J.P. Giesy, T.J. Kubiak, and J.G. Sikarskie. 1994. The influence of environmental contaminants on bald eagle (*Haliaeetus leucocephalus*) populations in the Laurentian Great Lakes, North America. P. 703-791 *in* B.U. Meyburg and R D. Chancellor, eds., Raptor Conservation Today. Pica Press, London.

Clark, K.E., W. Stansley, and L.J. Niles. 2001. Changes in contaminant levels in New Jersey osprey eggs and prey, 1989 to 1998. Archives of Environ. Contam. Toxicol. 40:277-284.

Clark, K.E., L.J. Niles, and W. Stansley. 1998. Environmental contaminants associated with reproductive failure in bald eagle (*Haliaeetus leucocephalus*) eggs in New Jersey. Bull. Environ. Contam. Toxicol. 61:247-254.

Niles, L.,K. Clark and D. Ely. 1991. Status of bald eagle nesting in New Jersey. Records of NJ Birds 17(1):2-5.

Elia, V. 2004. Midwinter bald eagle survey, southern NJ. Unpubl. rep. to Endangered and Nongame Species Prog., NJ Div. of Fish and Wildlife.

Steidl, R.J., C.R. Griffin, and L.J. Niles. 1991. Contaminant levels in osprey eggs and prey reflect regional differences in reproductive success. J. Wildl. Manage. 55(4):601-608.

U.S. Fish and Wildlife Service and NJ Div. of Fish and Wildlife. 1995. Evaluation of contaminant residues in Delaware Bay bald eagle nestlings. U. S. Fish and Wildlife Service, NJ Field Office, Pleasantville, NJ. 19p + appendices.

U.S. Fish and Wildlife Service and NJ Div. of Fish, Game and Wildlife. 1999. Assessment of blood contaminant residues in Delaware Bay bald eagle nestlings. USFWS, Pleasantville, NJ and NJDFW, Woodbine, NJ. 20p+appendices.